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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/701,888	11/04/2003	Peter C. Salmon	A-70884-2/AJT	6699

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EXAMINER

HARRISON, MONICA D

ART UNIT	PAPER NUMBER
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2829

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/701,888

Applicant(s)

SALMON, PETER C.

Examiner

Monica D. Harrison

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-11 and 13 is/are rejected.
- 7) ☐ Claim(s) 5 and 12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 4, 6, 8-11, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Lebby et al (5,367,593).

1. Regarding claim 1, Lebby et al discloses connection between a pair of components comprising: a male component (Figure 2, reference 48) having an array of bumps (Figure 5, reference 62); a female component (Figure 3) having a matching array (Figure 4, reference 45) of wells (Figure 2, reference 30); bonding material in said wells (Figure 2, reference 39); and wherein each of said bumps (Figure 5, reference 62) extends into its matching well (Figure 5, reference 60) and bonds with said bonding material to form a connection to said female component (Figures 2 and 6).

2. Regarding claim 3, Lebby et al discloses wherein bonding material is solder (Figure 2, reference 39).

3. Regarding claim 4, Lebby et al discloses wherein said components are alignment sensitive (Figure 2, reference 49).

4. Regarding claim 6, Lebby et al discloses wherein said male component or said female component is an electrical component (Figures 2 and 6).

5. Regarding claim 8, Lebby et al discloses wherein one of said electrical component is an integrated circuit chip (Figure 5, reference 57).

6. Regarding claim 9, Lebby et al discloses wherein one of said electrical component is a module access cable (Figure 2, reference 47; the cable is inherent because the optical fibers would most likely be held in a cable).

7. Regarding claim 10, Lebby et al discloses wherein one of said electrical component is an interconnection circuit (Figure 3, reference 50).

8. Regarding claim 11, Lebby et al discloses a method for connecting a pair of components comprising the steps of: providing an array of bumps (Figure 5, reference 62) on a male component (Figure 2, reference 48); providing a matching array (Figure 4, reference 45) of wells (Figure 2, reference 30) in a female component (Figure 3); filling said wells with bonding material (Figure 2, reference 39); aligning said male and female components (Figures 2, and 6) and inserting said bumps (Figure 5, reference 62) in said wells (Figure 5, reference 60); and activating said bond material to attach said female component to said male component (Figures 2 and 6).

9. Regarding claim 13, Lebby et al discloses a method for aligning a pair of components comprising the steps of: providing an array of bumps (Figure 5, reference 62) on a male component (Figure 2, reference 48); providing a matching array (Figure 4, reference 45) of wells (Figure 2, reference 30) in a female component (Figure 3); filling said wells with bonding material (Figure 2, reference 39); positioning said female and male components relative to one another (Figures 2, and 6) and inserting said bumps (Figure 5, reference 62) in said wells (Figure 5, reference 60); monitoring an alignment sensitive performance parameter for the combined

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components; optimizing said positioning by maximizing said performance parameter; and bonding said bumps to said wells using said bonding material (Figures 2 and 6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lebby et al (5,367,593) in view of Son et al (6,103,554).

10. Lebby et al discloses all claimed subject matter except wherein bumps are gold stud bumps (claim 2), and wherein said solder is indium based (claim 7).

Son et al discloses wherein bumps are gold stud bumps (column 5, lines 61-67), and wherein said solder is indium based (column 5, lines 61-67).

Since Lebby et al and Son et al are both from the same field of endeavor, the purpose disclosed by Son et al would have been recognized in the pertinent art of Lebby et al.

It would have been obvious at the time the invention was made to one with ordinary skill in the art to modify Lebby et al with the teachings of Son et al for the purpose of interchanging metals alloys for the purpose of better efficiency in creating solder balls, leads, or connections.

Allowable Subject Matter

11. Claims 5 and 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica D. Harrison whose telephone number is 571-272-1959. The examiner can normally be reached on M-F 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications ~~may be obtained from either Private PAIR or Public PAIR.~~ Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Monica D. Harrison
AU 2829

mdh
May 17, 2004



ERNEST KARLSEN
PRIMARY EXAMINER